Name: _____

Date: _____

Teacher: _____

Cosmic Times Keyword Match Pre-test

Match the keywords and phrases in the left column with their definitions in the right column.

1. ____ Einstein's General Theory of Relativity	A. A shift in the observed spectrum of an object due to its motion
2. ____ Dark energy	B. Stars that light up suddenly to great brightness and then fade away
3. ____ Cosmic microwave background	C. Rapid expansion of the Universe after the Big Bang
4. ____ John Mather	D. Galaxies which are farther away are moving away faster
5. ____ Supernovae	E. Matter whose existence is known only through its gravitational pull on other matter
6. ____ Big bang	F. The light from the early Universe
7. ____ Hubble's Law	G. COBE satellite
8. ____ Red shift	H. Explains how gravity works
9. ____ Inflation	I. Leading theory of the origin of the Universe

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KCLWM Chart

Fill out this chart as your teacher instructs. Use additional sheets as necessary.

Understanding the Universe				
K What I think I know	**C** What I confirmed	**L** What I have learned	**W** What I wonder	**M** What misconceptions

Big Question How and why has our understanding of the Universe changed over time?	

Cosmic Times Post-test

Circle the correct answer.

1. What immediately followed the Big Bang?
   A. Microwave Radiation
   B. Dark Energy
   C. Dark Matter
   D. Inflation

2. What phenomenon is used to measure the expansion of the Universe?
   A. Gravity
   B. Redshift
   C. Inflation
   D. Blueshift

3. The theory of relativity explains:
   A. Space & Time
   B. Gravity
   C. Energy & Mass
   D. All of the above

4. Which of the following defines "cosmic microwave background"?
   A. radiation left over by the Big Bang
   B. rapid expansion of the Universe
   C. a form of matter
   D. none of the above

5. Who first mapped the cosmic microwave background?
   A. Penzias & Wilson
   B. Albert Einstein
   C. John Mather
   D. Alan Guth

6. Who originated the inflationary Universe theory?
   A. Vera Rubens
   B. Alan Guth
   C. Penzias & Wilson
   D. John Mather

7. Who was Albert Einstein?
   A. Chemist
   B. Anthropologist
   C. Astronomer
   D. Theoretical Physicist

8. What is the difference between dark energy and dark matter?
   A. One is a hypothesized form of energy, the other is matter detected by its effect on other matter.
   B. One is a theory of gravity, the other a theory of energy
   C. One is a light source, the other radiation.
   D. There is no difference

9. What do we call stars that get very bright suddenly, then fade away?
   A. Red Dwarfs
   B. Blue Giants
   C. Neutron Stars
   D. Supernovae

10. In what year of the 6 Cosmic Times Posters was the Big Bang first mentioned?
    A. 1919
    B. 1929
    C. 1955
    D. 1965
    E. 1993
    F. 2006

Universe Mash-up Project Overview and Planning

You will be creating a media mash-up project about how we understand our Universe using NASA's Cosmic Times for inspiration. You'll be using existing video clips, audio clips, and images from the Universe Mash-up media archive to explore an aspect of the Cosmic Times materials.

This worksheet gives an overview of the video production process and includes a checklist for your project to help you keep on track. Your teacher will give you additional resources as you work your way through the production process.

Video production process

There are three main phases to making a video: pre-production, production and post-production.

Phase 1: Pre-Production

Pre-production is the planning phase of the project. These steps happen before the camera is turned on or the video-editing software is fired up. The steps should be followed in order.

Choose a topic	**Research** the topic	Write a **treatment script** – outline the main points and flow	Sketch out a **storyboard** – a visual flow of the scenes	Write the **final script**

Phase 2: Production

Production is the process of creating all pieces of the final video. These steps can happen in any order.

Produce **video** footage	Create **graphics** such as images, photos, or slides	Record **voice-overs** as required by the final script	Choose **music** for the background as appropriate

Phase 3: Post-Production

In post-production, the final video comes together.

Edit video clips and footage and place the clips in order

Add **audio** tracks to the video

Insert **transitions, titles and music** to the final video

Encode video and output in a format that others can view

Share your video with your class, friends, family, and the world!

Project checklist and due dates

Due date	Done?	
_____	_____	Pick topic and develop essential question
_____	_____	Research (take notes, record citations, find media)
_____	_____	Write treatment script
_____	_____	Make storyboard
_____	_____	Write final script
_____	_____	Download media to use
_____	_____	Produce additional footage and graphics, if needed
_____	_____	Record narration
_____	_____	Create title, credits graphics
_____	_____	Insert all pieces into presentation software and edit
_____	_____	Score project using rubric and score sheet
_____	_____	Turn in to instructor

Guidelines for video

- Your final video should be 3-5 minutes long and should be accurate and engaging, using the part of the Cosmic Times story that most interests you.
- You will be graded using the Universe Mash-up Project Grading Rubric.
- Make sure the images, videos, and audio you select help tell your story, and make sure to give proper credit for all of the media you use.
- Use only copyright-free materials; if you want to use media that has a copyright, you will need to get permission to use it from the person who holds the copyright.
- Stay with visuals as long as it is interesting – too short a time will make your video seem choppy, while too long will make it drag.
- Make sure your story flows with transitions between different visuals and narration connecting different ideas.
- Speak with a strong, clear voice when narrating.

Universe Mash-up Grading Rubric

Category	4 points	3 points	2 points	1 point	Score
Content	• Covers topic in-depth with a strong central idea • Subject knowledge is excellent • Uses at least 5 facts and 5 details or examples • Uses MLA bibliography and credits	• Covers topic with a central idea • Subject knowledge is good • Uses at least 4 facts and 4 details or examples • Uses MLA bibliography and credits	• Covers essential information about topic • Contains 1-2 factual errors • Uses at least 3 facts and 3 details or examples • Uses MLA bibliography and credits	• Content is minimal • Contains several factual errors • Uses at least 2 facts and 2 details or examples • Missing MLA bibliography or credits	
Creativity	• Product shows a large amount of original thought • Ideas are creative and inventive • Uses 3 or more original ideas based on research that helps others understand the topic	• Product shows some original thought • Uses at least 2 ideas that are expressed uniquely that can benefit others	• Product uses other people's ideas (giving credit), but little evidence of original thought • Uses at least 1 idea that is expressed uniquely that can benefit others	• Uses other people's ideas, but does not give them credit • Does express any ideas uniquely in a way that can benefit others	
Pre-production	• Treatment script shows strong evidence of high-level research and detailed planning • Storyboard has at least 10 detailed thumbnail sketches • Final script shows a logical sequence, good pacing, interesting dialogue and effects	• Treatment script shows evidence of research and planning • Storyboard contains at least 8 thumbnail sketches • Final script shows flow of ideas, pacing, dialogue and effects.	• Treatment script shows some evidence of research and planning • Storyboard contains at least 5 thumbnail sketches • Final script does not flow well between ideas, dialogue and effects	• Treatment script shows little evidence of research and planning • Storyboard contains fewer than 5 thumbnail sketches • Final script is incomplete	

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Production	• Production techniques demonstrate outstanding technical skills • Clarity of video and audio throughout the video • Uses at least: 10 images, 8 digital effects, one video clip and/or audio clip, and 5 voice-overs • If using text: no more than 8 words per scene, allows time to read, and text is easy to read. • Includes credits and does not use copyrighted resources	• Production techniques demonstrate technical skills • Clarity of video and audio is achieved • Uses at least: 8 images, 6 digital effects, and 3 voice-overs • If using text: no more than 12 words per scene, allows time to read, and text easy to read • Includes credits and does not use copyrighted resources	• Production techniques demonstrate beginner level skills • Clarity of video and audio is evident • Uses at least: 5 images and 1 voice-over • If using text: uses too many words per scene, does not allow time to read, or text is hard to read • Includes credits and does not use copyrighted resources	• Production skills are not evident • Ideas do not flow • Clarity of video and audio is not achieved • Uses fewer than 5 images and no voice-over • If using text: uses too many words per scene, does not allow time to read, and text is hard to read • Does not include credits and/or uses copyrighted resources	
Organization	• Content is well organized by grouping related ideas and using correct sequence • An overall unity and coherence producing a connected flow of content is established	• Content is organized by grouping related ideas and using sequence • There is unity and coherence	• Content is logically organized for the most part	• There was no clear or logical organizational structure, just lots of facts	
Overall effectiveness	• Strong message is conveyed • Video covers topic accurately, clearly, and in depth • Highly engages and impacts the audience	• A central message is conveyed • Video covers topic accurately and clearly • Video engages and impacts the audience	• A central theme is present • Video covers topic with some engagement and impact	• Video is scattered and confusing with no central message evident • Video is not engaging	

Treatment Script

A treatment script is an outline of the main elements of a video or how you treat the video. You may think of the treatment script as the guide of what you will create.

1. Watch the Universe Mash-up example, *From the Inside Out*. Put yourself in the place of the creator of the video and answer the following questions to better understand the video's main elements. These main elements would be the treatment script.
   • What's the theme or central message?
   • Who is the audience?
   • What's the purpose of the video?
   • What's the desired outcome – what do you want the viewer to do, think or feel?
   • What style has been successful with this particular audience in the past?
   • What's new or different about this subject?
   • What's the budget for the production?
   • How long will the finished video be?

2. Think about the project you want to create and then answer those same questions. Use your answers as guidelines as you write your treatment script for your Universe Mash-up.

Storyboard

A storyboard is a visual outline of a video. Essentially it is a blueprint for your video so that you know each clip that you'll use and any additional media you'll need to produce to make your final project.

Fill in the following template for your storyboard – use additional pages as necessary. For all clips and images, record where to find them and how the credit for using the image should appear under "Source." If you need to create the video or image, put "original" under the Source.

Shot 1:

Audio:

Source:

Shot 2:

Audio:

Source:

Shot 3:

Audio:

Source:

Shot 4:

Audio:

Source:

Shot 5:

Audio:

Source:

Shot 6:

Audio:

Source:

Universe Mash-up Production Checklist

You will need to take an inventory of the media you will need for your mash-up. Look through your final script and identify all the elements – video clips, audio clips and images. Fill out the lists below. Only when you have all the pieces assembled can you move on to the post-production phase of your project.

Video Clips

Pre-made clips

Downloaded?	Title or description

Original clips (need to be recorded)

Produced?	Title or description

Audio Clips or Voice-Overs

Pre-made clips

Downloaded?	Title or description

Original clips (need to be recorded)

Produced?	Title or description

Universe Mash-up Production Checklist (page 2)

Images

Pre-made images

Downloaded?	Title or description

Original images (need to be made)

Produced?	Title or description

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Universe Mash-up Self Evaluation

Use the Universe Mash-up Grading rubric to determine the score you believe your project has earned. List the evidence to justify your score.

My Cosmic Times Media Mash-up deserves a score of: _____

Justification

My project's Content deserves _____ points, because:

My project's Creativity deserves _____ points, because:

My project's Pre-production deserves _____ points, because:

My project's Production deserves _____ points, because:

My project's Organization deserves _____ points, because:

My project's Overall effectiveness deserves _____ points, because:

Teacher's comments